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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/604,796	06/27/2000	Kyeong Jin Kim	8733.20134	4009

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EXAMINER

RUDE, TIMOTHY L

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/604,796

Applicant(s)

KIM ET AL.

Examiner

Timothy L Rude

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 17.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claims*

1. Claims 1 and 20 are amended necessitating new grounds of rejection.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (APA) in view of Yamada et al (Yamada) USPAT 6,344,883, and Colgan et al (Colgan) USPAT 6,256,080 B1.

As to claims 1-4, 7, 20, and 26-29, APA discloses in Figure 1 and in the description of the related art, a multi-domain liquid crystal display device comprising: first and second substrates facing each other and having a pixel region and a liquid crystal layer between the first and second substrates (inherent).

APA does not explicitly disclose a first dielectric frame on one side of the pixel region; a second dielectric frame on another side of the pixel region; and a dielectric

protrusion between the first dielectric frame and the second dielectric frame which extends from the first substrate to the second substrate and/or acts as a spacer.

Yamada discloses in Figures 10A-10D (col. 19, line 40 through col. 27, line 35) a dielectric frame, 36, (OMR83, col. 26, lines 45-62) in a region other than a region where said pixel (pixel region in 10C) electrode is formed on one or both of the substrates (col. 20, lines 8-12), said dielectric frame(s) distorting electric field applied to said liquid crystal layer (inherent to dielectric material, OMR83), and an alignment layer, 38a and 38b, on at least one substrate between said first and second substrates. Yamada also discloses in Figure 15 a centrally located dielectric convex portion, 69 (Applicant's dielectric protrusion), (col. 26, lines 45-62).

Note: The use of a dielectric material such as OMR83 for distorting the electric field was well known to those having ordinary skill in the art of liquid crystals at the time the claimed invention was made, however, in support of the fact that OMR83 is a dielectric that causes distortion of applied electric fields in LCD with liquid crystal material having negative dielectric anisotropy, Onishi et al (Onishi) USPAT 5,844,643 is cited. Onishi (Figures 8 and 9C, col. 20, lines 30-42 and col. 28, lines 8-19) discloses the use of OMR83 structures to create multi-domain effects wherein the LC layer thickness is not greatly reduced and where reduced layer thickness is not cited as a causal effect. The OMR83 structures of Onishi are considered to be functionally the same as those of Applicant, and they are considered to confirm the structures of Yamada do distort the electric field.

Yamada is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a first dielectric frame on one side of the pixel region; a second dielectric frame on another side of the pixel region; and a dielectric protrusion between the first dielectric frame and the second dielectric frame to the LCD of APA to avoid a rough display in gray scales (col. 13, lines 36-46).

Colgan teaches in Figures 21A-24 that a ridge, 706, 720, or 724 (Applicant's dielectric frame and/or insulating protrusion), for pretilt control (Abstract, col. 3, lines 34-51, col. 6, lines 49-53, and col. 7, lines 29-57) may be used as spacers (instead of other spacers, 726, or with spacers, 726) to form the cell gap, G (col. 15, lines 12-33).

Colgan is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to extend the dielectric frame and/or insulating protrusion to the opposed substrate to serve as a spacer to establish the cell gap.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of APA with the dielectric frames and protrusions of Yamada extended to the opposed substrate of Colgan to avoid a rough display in gray scales and serve as a spacer to establish the cell gap.

As to claims 2-4, 7, and 26-29, APA does not explicitly disclose the multi-domain liquid crystal display device wherein the dielectric protrusion is expanded from the first substrate to the second substrate or from the second substrate to the first substrate.

Yamada discloses in Figure 15 a dielectric protrusion, 69, expanded from the first or second substrate (col. 26, lines 45-62).

Yamada does not explicitly disclose the dielectric protrusion, 69, expanded to the opposite substrate, however, it is well known in the art of liquid crystals to use dielectric convex portions as spacer elements which expand to the opposite substrate.

Yamada is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a dielectric protrusion expanded from the first substrate to the second substrate to control the liquid crystal orientation in a symmetrical pattern while providing support as a spacer.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of APA with an expanded dielectric protrusion of Yamada on either the first or second substrates.

As to claims 9-11, 14-19, 21-25, and 34, mere duplication of parts is not patentably distinct unless unexpected results are obtained. APA in view of Yamada and Colgan disclose the claimed invention except for duplication of dielectric structures. It would have been obvious to one having ordinary skill in the art at the time the invention was made to add additional dielectric structures to provide more distortion of electric fields to enhance liquid crystal tilt and thereby improve viewing angle performance, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art.

As to claim 13, it is well known in the art of liquid crystals to divide a pixel into a plurality of independently driven regions in order to provide for independent control of red, green, and blue to comprise a color display.

As to claims 5, 6, 8, 12, 30-33, and 35-37, rearrangements of parts the invention disclosed by APA in view of Yamada and Colgan and are therefore not patentably distinct. It would have been obvious to one having ordinary skill in the art at the time the invention was made to rearrange dielectric structures to provide better distortion of electric fields to enhance liquid crystal tilt and thereby improve viewing angle performance, since it has been held that rearrangement of parts of an invention involves only routine skill in the art.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-37 have been considered but are moot in view of the new ground(s) of rejection.

Note: References cited but not applied are relevant to the instant Application.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (703) 305-0418. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.



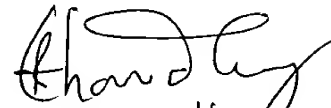
Art Unit: 2871

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.



Timothy L Rude  
Examiner  
Art Unit 2871

TLR  
April 28, 2003



T. Chowdhury  
Primary Examiner